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Running Title: An Adult Female Mosquito Survey in Southwest Missouri in 2014

In the fall of 2008 and 2009, 35 students enrolled in freshman biology courses at NorthWest Arkansas Community College participated in a landing/probing mosquito survey to determine if the Asian tiger mosquito, *Aedes albopictus* (Skuse), was the principal pest mosquito in Northwest Arkansas (Wilson and Jamieson 2010). A total of 110 mosquitoes representing four genera and seven species was collected. *A. albopictus* represented 79.1% (87 of 110) of mosquitoes collected during the study. The West Nile Fever vector *Culex pipiens* (Linnaeus) was a distant second at 6.4%.

We conducted a similar survey in the summer of 2014 in Southwest Missouri. Sampling followed the methodology of Pfitzner et al. (1998), where students sat in a shaded area on their property for 20 minutes and collected any adult female mosquito attempting to take blood using a wide-mouthed vial. Students were instructed to capture the mosquito while it was probing and before it actually started taking a blood meal. All collections were done within the 2 hour period before dusk with the intent of maximizing the chances of capturing diurnal, crepuscular, and nocturnal species. Any mosquito captured was killed by being placed in a freezer overnight and subsequently identified using the keys of Darsie and Ward (2005). There were 4 collection sites, one each within the city limits of Cassville (36.6800^{o} N, 93.8694^{o} W), Washburn (36.5894^{o} N, 93.9639^{o} W), Monett (36.9218^{o} N, 93.9259^{o} W) and Crane (36.9039^{o} N, 93.5711^{o} W) Missouri. Six students made a total of 42 collections beginning on June 4th and concluding on September 25th. A total of 216 specimens was collected represented by 11 species and 5 genera (Table 1). The greater numbers and diversity in Southwest Missouri is probably explained by the fact that the collection sites were located in more rural areas than in the Northwest Arkansas survey. The rural environment offers a wider array of larval development sites than does the suburban environment sampled in the Arkansas survey. The primary oviposition sites offered to mosquitoes in the suburban area are artificial containers such as discarded automobile tires, flower pots, house gutters and other habitats that resemble the tree holes which *A. albopictus* originally utilized as a larval habitat in its native region of Southeast Asia (Hawley 1988, Moore et al. 1988). Regardless, the Asian tiger mosquito dominated both surveys.

Table 1. Species Survey of Landing/Probing Mosquitoes in Southwest Missouri, 2014.

Species	Percentage of Total
Aedes albopictus	44.9
A. trivittatus	17.6
Culex erraticus	11.1
A. vexans	9.3
C. pipiens	8.8
C. restuans	2.8
Psorophora ferox	1.9
O. canadensis	1.4
A. triseriatus	1.4
Anopheles quadrimaculatus	0.5
P. ciliata	0.5

Aedes albopictus has colonized virtually all cities within the Ozark Mountains Physiographic Region and in many areas is locally the only pestiferous species (Jamieson and Olson 1995, Pfitzner et al. 1998). In addition, its presence and abundance is of major concern because of its ability to vector diseases such as dengue fever and chikungunya (Miller and Loaiza 2015). The concern regarding Zika virus affecting travelers returning to the United States has made the monitoring of *A. albopictus* populations even more important. The Centers for Disease Control lists both

Aedes aegypti (Linnaeus) and *A. albopictus* as the principal vectors of this potentially devastating arbovirus (CDC – Zika 2016). *A. albopictus* is easily distinguished from native species by its small size, distinctive black and white markings and stripe on the top of the thorax (scutum) (Figure 1).

Fig.1: Distinctive markings on *Aedes albopictus*

Culex pipiens (Linnaeus) was the second most abundant mosquito collected in the Northwest Arkansas study although it only represented 6.4% of the total number of specimens collected. Wilson and Jamieson (2010) mentioned its presence as significant because of its ability to vector West Nile fever (Kilpatrick et al. 2005). In this study it was slightly more abundant (8.8% of total specimens collected) but was surpassed by another *Culex* species, *Culex erraticus* (Dyar and Knab) at 11.1%. Both are competent West Nile potential vectors because of their preference for avian blood (Bolling et al. 2005). It is interesting to note that the third author has conducted surveys, both larval and adult, across the Ozarks for the last 25 years and has never encountered *C. erraticus*. The larval production site was never found in this study, but the third author has collected *C. erraticus* in rice fields in Eastern Arkansas (Jamieson et al. 1994).

It is hoped that these data will be of value to vector control specialists with the Missouri Health Department.

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